Technology Constraints on Nonverbal Aspects of Communication:

The Effects of Note Taking Technologies on Eye Contact

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TECHNOLOGY CONSTRAINTS ON NONVERBAL ASPECTS OF COMMUNICATION

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SUMMARY

Communication involves more than just verbal speech; there are nonverbal aspects of communication such as body position, eye contact, hand gestures, and the like. Specifically in an interview setting, both the person conducting the interview and the person answering questions display their own methods of communication both verbal and nonverbal. When technology is introduced into the situation, changes in interviewer-interviewee interaction influence the interview process, the outcome, and even the aftermath. Even just the presence of a technological device, as opposed to pen and paper or the absence of a note-taking aid, could potentially alter the subjective interview experience. Understanding the tradeoff between these objective and subjective variables would be very useful. Research indicates that electronic documentation can lead to an increase in documentation and accuracy of recording. Research on the constraints of technology on nonverbal aspects of communication has been done in the Georgia Tech Sonification Lab. An investigation of a patient's perception of a doctor after a medical interview as a consequence of different note-taking methods was conducted. In order to explore the critical interaction between doctors and patients, different note-taking methods were employed. The results were that the patients perceived the desktop computer to be the least favorable technology used by the doctor, which is applicable to society since computers are becoming more common in medical interviews (Olsheski & Walker, 2011). However, previous work on this topic did not take into account the factor of eye gaze or personality which is what the present study considered. Also, this study explored an interview involving a roommate situation, which could be applied to other interview-type situations or interactions.

INTRODUCTION

There are other studies that have been conducted that focus on nonverbal aspects of communication. For example, Carney, Judith, and Lavonia conducted research on the relationship between social power and nonverbal communication and discovered that people who had higher levels of power tended to pay less attention to a conversation partner than did people who had lower levels of power (Carney et.al, 2005). The researchers of this study paid attention to a relationship between power and communication, but again there were no factors of technology or personality.

In other past studies, there have been investigations of eye gaze and its relationship with factors such as emotion. Wirth, Sacco, Hugenberg, and Williams (2010) studied eye gaze and its relation to evaluation. They discovered that participants in the study who received averted eye contact felt ostracized. This was evaluated through reduced implicit and explicit self-esteem, lowered relationship value, and increased temptations to act aggressively toward the interaction partner (Wirth et. al, 2010). In another study, Lobmaier, Tiddeman, and Perrett (2008) focused on perceived direction of eye gaze. The results were that happy faces were more likely to be judged as looking at the observer than were neutral, fearful, or angry faces. Angry faces were more often judged as looking at the observer than were fearful and neutral expressions.

Personality is a factor that has many implications on a number of different factors and variables. Rutter, Morley, and Graham (1971) explored the visual interaction of groups of introverts and groups of extraverts. They observed and recorded the behavior of these groups in a group setting for three minutes. They found that there were no differences between the two groups in eye gaze and length of eye gaze, but they did find that extraverts tended to look more frequently than introverts (Rutter et. al 1971). Personality by itself is already a tricky variable to measure. According to John and McCrae (1991), the Five Factor Model proves to be useful in individual assessment and for the clarification of many topics in the field of personality

psychology (John & McCrae 1991). These studies did not investigate the effects that technology may have on these variables.

Because of the lack of research that incorporates personality, eye gaze, and technology, there is a need for a study that that focuses on all of these variables. Specifically, this current study explored the technology constraints on nonverbal aspects of communication (eye gaze) and the relationship that personality has on eye gaze. This was done with an interaction between two people. This interaction could be an interview in which the interviewer's eye gaze was measured during the time of the interview. Also, the current study incorporated different technologies for note-taking during the interview to explore the constraints that those technologies have on eye gaze. Findings from this current study should be useful, since the results may be applied to other interactions where note taking technologies are used. The hypothesis is that different technologies will lead to different interpersonal interactions.

METHODS

Participants

A total of 28 undergraduate students from Georgia Tech, with normal or corrected-to-normal hearing and vision participated for extra credit in psychology courses. They were all between the ages of 18-23.

Design

This experiment consisted of a between-subjects design with one independent variable. The independent variable was the technology device used for note-taking – pen and paper, tablet device, laptop computer, or the control which was an absence of a note-taking technology. The dependent variable was the amount of eye contact the interviewer made with the interviewee.

Other factors such as personality traits and background of technology use were evaluated using questionnaires (see Figure 1 and 2).

Materials

This experiment took place at the Georgia Tech School of Psychology Sonification Lab under the advisement and supervision of Dr. Bruce Walker and Julia Olsheski. The same brand and types of devices were used for each participant for the tablet condition (an iPad) and the laptop computer condition (an Acer laptop). Also, the Tobii glasses eye tracker system was used to measure eye contact.

Procedure

Participants were asked to act as if they were in an interview setting where they were interviewing a potential roommate. The interviewee (a confederate) had studied a pre-made script (see Figure 2) with prepared answers for all the questions that the participant asked. The interviewer (the participant) wore the eye tracking glasses while conducting the interview so that their eye movements could be recorded. The interview was also filmed in order to gather more information about the nonverbal aspects of communication during the interview. The interviewer was given pen and paper, a tablet, a laptop computer, or no note taking technology to take notes during the interview. After the interview process was over, the participant was asked to fill out questionnaires that evaluated previous technology usage and experience. After the participant had gone through the whole experiment, he or she was debriefed about the confederate and the intentions of measuring eye contact (see Figure 3). The eye tracking device's data was uploaded onto a computer with the Tobii software where the visual field of each participant was viewed. A red dot shown in the video files showed what the pupils were looking at. In this study, to determine the amount of time of eye contact between the participant and the confederate a

rectangle was visualized right around the confederate's eyes in the videos and the time that the red dot was seen inside the rectangle was recorded for every participant. This time was then divided by the total time of the video, and these values were averaged for each participant. The quantitative data collected was organized in SPSS and analyzed running a one-way ANOVA test along with other follow-up tests.

RESULTS

The mean values for each of the conditions are seen in Table 1. The mean eye gaze for the control condition is 0.36 (*SD = 0.17*) meaning that on average the participants in the control condition maintained eye gaze 36% of the time of the interview. For the pen and paper condition, the mean eye gaze is .12 (*SD=.06*), for the tablet condition the mean eye gaze is .090 (*SD=.055*), for the laptop condition the mean eye gaze is .133 (*SD=.0*43). The highest mean eye gaze is in the control condition while the lowest mean eye gaze is in the tablet condition. In order to confirm any significant differences, a one-way ANOVA test was run (see Table 2). The F value is 10.76 (*P = .00*) which means that there are significant differences between the eye gaze values.

The results of the test showed significant differences between the means of eye gaze while using certain note-taking technologies (see Table 3). Between the control and the pen and paper condition the statistical value is p = .001. Between the control and the laptop condition the statistical value is p = .016. Between the control and tablet condition the statistical value is p = .001. Between the pen and paper condition and the laptop condition the statistical value is p = 1.00 which implies no significant difference between the mean of eye gaze proportions of these conditions. Between the pen and paper condition and the tablet condition the statistical value is p

= .897 which also implies no significant difference between the mean of eye gaze proportions of these conditions. Between the laptop and tablet condition the statistical value is p = .884 which also implies no significant difference between the mean of eye gaze proportions of these conditions. As a follow-up, a post-hoc Tukey test was run on this data. The results (see Table 4) are similar from the ANOVA, so the same conclusions still hold.

From the data of the personality questionnaires, the scores were calculated by adding up the answers for each category (Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect) and dividing that by the total number of points available for that personality trait. For example, there were 112 points available for the extraversion category and if a participant's answers totaled up to be say 60, then their percentage for extraversion is .536 (see Table 5). In order to see if eye gaze and extraversion were correlated, a correlation test was run (see Table 6). The Pearson Correlation coefficient between eye gaze and extraversion is .292 (*P=.132*), so it can be concluded that in this experiment a higher eye gaze was not correlated with a higher extraversion score.

Taking gender into account as well as extraversion, a between-subjects effects test was also run (see Table 7). The F value for gender and technology is 1.535 (*P= .238*) so there were no significant effects of gender and technological condition on the eye gaze values. However there were significant effects of the technology condition on the eye gaze values with an F value of 10.823 *(P=.000*).

DISCUSSION

Based on this data analysis, the results indicate that the mean of eye gaze for each of the note taking technology conditions used in this study was significantly different compared to the control condition. These findings contribute to the conclusion that the presence of a note taking

technology is what makes a difference in eye gaze. However, the results indicate that there are not significant differences in eye gaze between the pen and paper and the laptop condition, between the pen and paper and the tablet condition, or between the laptop and the tablet condition. This gives more support that the presence of any note taking technology makes more of a significant difference than the note taking technology itself. These results have many implications when it comes to note-taking which is a universal activity in the workplace, medical field, classroom, and other settings. The significance of a presence of a technology could change the way that professionals conduct business or the way students take notes. Since the mean of the amount of eye gaze with different technologies were lower than that of the control condition of no note-taking technology, this could indicate a benefit of doing away with note-taking technologies altogether in situations where eye gaze and interpersonal connection is important.

In this study, the Tobii eye tracking glasses could have altered the way the participant acted because it is not an everyday device that people are used to. Also, the filming of the interview could have changed their behavior as well. In future studies, the relationship between other types of technology and other nonverbal aspects of communication such as hand gestures or body language could be explored. There are also many other connections that can be made between eye gaze and other aspects of interaction. The results of this study provide information about technology and human interaction which can be used to discover more and more connections between these fields.

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Table 1

Descriptive Statistics of Eye Gaze Data

Tech Condition	N	Minimum	Maximum	Mean	Std. Deviation
Control	9	.082	.551	.361	.170
Pen and Paper	9	.053	.207	.120	.060
Tablet	6	.010	.153	.090	.055
Laptop	4	.078	.179	.133	.043

Note: This table shows the minimum and maximum values as well as the meansof eye gaze for each condition.

Table 2

One- Way ANOVA Test

	Sum of Squares	df	F	Sig.
Between Groups	.378	3	10.757	.000
Within Groups	.281	24		
Total	.659	27		

Note: This table shows the results of the one-way ANOVA test.

Table 3

Multiple Comparisons of Mean Eye Gaze Proportions			
(I) 0 = control, 1 = penandpaper, 2 = laptop, 3 = tablet	(J) 0 = control, 1 = penandpaper, 2 = laptop, 3 = tablet	Std. Error	Sig.
0	1	.051	.001
	2	.065	.016
	3	.065	.001
1	0	.051	.001
	2	.065	1.000
	3	.065	.897
2	0	.065	.016
	1	.065	1.000
	3	.077	.884
3	0	.065	.001
	1	.065	.897
	2	.077	.884

Note: This table shows the p-values of the comparisons between the means of eye gaze proportions.

Table 4

Post-Hoc Tukey			
(I) 0 = control, 1 = penandpaper, 2 = laptop, 3 = tablet	(J) 0 = control, 1 = penandpaper, 2 = laptop, 3 = tablet	Std. Error	Sig.
0	1	.051	.000
	2	.057	.000
	3	.065	.009
1	0	.051	.000
	2	.057	.950
	3	.065	.997
2	0	.057	.000
	1	.057	.950
	3	.070	.925
3	0	.065	.009
	1	.065	.997
	2	.070	.925

Note: This table shows the p-values of the post-hoc Tukey test between the means of eye gaze proportions.

Table 5

Personality Questionnaire Results Averaged by Tech Condition

Condition	Eye Gaze	Extraversion	Agreeableness	Conscientiousness	Emotional Stability	Intellect
Control	.361	.671	.774	.639	.646	.653
Pen and Paper	.120	.579	.802	.821	.605	.649
Tablet	.090	.640	.794	.753	.548	.604
Laptop	.133	.732	.781	.830	.602	.603

Note: This table shows the averages of the personality questionnaire results categorized by each tech condition and the corresponding mean eye gaze for the conditions.

Table 6

Correlation Test between Eye Gaze and Extraversion

Pearson Correlation (eye gaze - extraversion)	Sig. (2-tailed)
.292	.132

Note: This table shows the results of a correlation test between the eye gaze and extraversion values.

Table 7

Tests of Between-Subjects Effects

Source	df	F	Sig.
Corrected Model	8	5.462	.001
Intercept	1	.004	.952
Extraversion	1	3.121	.093
Gender	1	.376	.547
Tech. Condition	3	10.823	.000
Gender * Tech.	3	1.535	.238
Error	19		
Total	28		

Note: This table shows the results of a multivariate test with the factors of gender, technology condition, and extraversion on eye gaze.

Figure 1

Post-Interview Questionnaire

Background and Technology-Use Questionnaire

Age: _____

Gender: Male _____Female _____

Do you have normal or corrected-to-normal vision? Yes __ No __

Do you have normal or corrected-to-normal hearing? Yes __ No __

Major:What is your major? _____

Note-taking condition: _____

The purpose of this questionnaire is to assess your familiarity and experience with technology. Please answer all questions by placing a check mark at the appropriate response.

1. Please check which of the following items you own.
   - ☐ Pen and Paper
   - ☐ Laptop Computer
   - ☐ Desktop Computer
   - ☐ Tablet
   - ☐ Touch-Screen Phone
   - ☐ ------ *None of the Above* --------

2. Indicate the total length of time you have used computers.
   - ☐1 Less than 1 year
   - ☐2 1 year but less than 3 year
   - ☐3 3 year but less than 5 years
   - ☐4 5 years but less than 10 years
   - ☐5 At least 10 years

3. Indicate the total length of time you have used tablet devices.
   - ☐1 Less than 6 months
   - ☐2 6 months but less than 1 year
   - ☐3 1 year but less than 3 years
   - ☐4 3 years but less than 5 years
   - ☐5 At least 5 years

4. Indicate the total length of time you have used touch screen phones or other touch screen devices (i.e. iPod Touch).
   - ☐1 Less than 6 months

☐2 6 months but less than 1 year
☐3 1 year but less than 3 years
☐4 3 years but less than 5 years
☐5 At least 5 years

5. How often do you use these for **general use**?

	1Never	Less than 1 hour a week	1 hour but less than 5 hours a week	5 hours but less than 10 hours a week	10 hours but less than 15 hours a week	At least 15 hours a week
a Pen and Paper						
b Laptop Computer						
c Desktop Computer						
d Tablet						
e Touch-Screen Phone						

6. Within the last year, how frequently have you used the following methods **for taking notes**?

	Never	Once in a while	Seldom	Often	Most of the time	Always
a Pen and Paper						
b Laptop Computer						
c Desktop Computer						
d Tablet						
e Touch-Screen Phone/iPod Touch						

7. How effective are these note-taking methods?

	Not Ineffective	Fairly ineffective	Fairly effective	Very effective	Very effective	N/A
a Pen and Paper						
b Laptop Computer						
c Desktop Computer						
d Tablet						
e Touch-Screen Phone/iPod Touch						

. Please indicate which best describes how you feel.

	Strongly Disagree			Neither Agree nor Disagree			Strongly Agree
I felt that I maintained good eye contact with the person I interviewed	1	2	3	4	5	6	7
I felt that the note-taking method I used greatly influenced my ability to maintain eye contact.	1	2	3	4	5	6	7
I usually maintain good eye contact when speaking to someone.	1	2	3	4	5	6	7

Figure 2

Personality Questionnaire

QUESTIONNAIRE PACKET

TASK INSTRUCTIONS:
This is a questionnaire, which will ask you to report on your personal feelings or beliefs. There are no right or wrong answers to these questions; we are simply interested in learning your opinion.

Please do not write your name or any other identifying information on these forms. All of your responses will be kept confidential. Documents that contain your name, such as signed consent forms, will be kept separate from your data. In other words, your name will not appear with the responses that you provide on the questionnaires in this packet. When completing these questionnaires, please try to be as candid and honest as possible.

Please read each item carefully and respond to the items to the best of your ability.

AS YOU COMPLETE THE QUESTIONNAIRE, PLEASE KEEP THESE POINTS IN MIND:

- **There are no right or wrong answers for the questions asked in take-home packet.**
- **For each item, please choose the response that best corresponds to your opinion.**
- **Answer the questions to the best of your ability, even if they do not seem to apply to you very well.**
- **Answer as honestly as you can, what is true for you. Please do not mark something because it seems like the "right thing to say".**

The statements below describe behaviors and feelings. Please read each statement carefully. Next, indicate how accurately each statement describes *you* by circling the number that best corresponds to your opinion. That is, if the statement is an EXTREMELY INACCURATE description of you (not at all like you), you should circle the number "1". However, if the statement is an EXTREMELY ACCURATE description of you (very much like

you), you should circle the number “7”. Of course, a statement may be neither extremely inaccurate nor extremely accurate description of you; for these items circle the number that describes the best fit. When making your responses, describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. For each item, CIRCLE ONE and ONLY ONE response.

	VERY INACCURATE						VERY ACCURATE
1. I am always prepared.	1	2	3	4	5	6	7
2. I am not really interested in others.	1	2	3	4	5	6	7
3. I take charge.	1	2	3	4	5	6	7
4. I get stressed out easily.	1	2	3	4	5	6	7
5. I have excellent ideas.	1	2	3	4	5	6	7
6. I follow a schedule.	1	2	3	4	5	6	7
7. I am relaxed most of the time.	1	2	3	4	5	6	7
8. I don’t talk a lot.	1	2	3	4	5	6	7
9. I avoid my duties.	1	2	3	4	5	6	7
10. I get irritated easily.	1	2	3	4	5	6	7
11. I have a vivid imagination.	1	2	3	4	5	6	7
12. I find it difficult to approach others.	1	2	3	4	5	6	7
13. I am full of ideas.	1	2	3	4	5	6	7
14. I feel comfortable around people.	1	2	3	4	5	6	7
15. I feel little concern for others.	1	2	3	4	5	6	7
16. I have a soft heart.	1	2	3	4	5	6	7
17. I make a mess of things.	1	2	3	4	5	6	7
18. I have difficulty understanding abstract ideas.	1	2	3	4	5	6	7
19. I am not interested in other people’s problems.	1	2	3	4	5	6	7
20. I make friends easily.	1	2	3	4	5	6	7
21. I make people feel at ease.	1	2	3	4	5	6	7
22. I am a perfectionist.	1	2	3	4	5	6	7

	VERY INACCURATE						VERY ACCURATE
23. I wait for others to lead the way.	1	2	3	4	5	6	7
24. I pay attention to details.	1	2	3	4	5	6	7
25. I bottle up my feelings.	1	2	3	4	5	6	7
26. I leave my belongings around.	1	2	3	4	5	6	7
27. I use difficult words.	1	2	3	4	5	6	7
28. I am quiet around strangers.	1	2	3	4	5	6	7
29. I feel others' emotions.	1	2	3	4	5	6	7
30. I like order.	1	2	3	4	5	6	7
31. I am skilled in handling social situations.	1	2	3	4	5	6	7
32. I sympathize with others' feelings.	1	2	3	4	5	6	7
33. I often feel uncomfortable around others.	1	2	3	4	5	6	7
34. I insult people.	1	2	3	4	5	6	7
35. I seldom feel blue.	1	2	3	4	5	6	7
36. I get upset easily.	1	2	3	4	5	6	7
37. I don't mind being the center of attention.	1	2	3	4	5	6	7
38. I spend time reflecting on things.	1	2	3	4	5	6	7
39. I don't like to draw attention to myself.	1	2	3	4	5	6	7
40. I feel at ease with people.	1	2	3	4	5	6	7
41. I have frequent mood swings.	1	2	3	4	5	6	7
42. I am a very private person.	1	2	3	4	5	6	7
43. I am the life of the party.	1	2	3	4	5	6	7
44. I have frequent mood swings.	1	2	3	4	5	6	7
45. I am quick to understand things.	1	2	3	4	5	6	7
46. I usually start conversations.	1	2	3	4	5	6	7
47. I worry about things.	1	2	3	4	5	6	7
48. I have a rich vocabulary.	1	2	3	4	5	6	7

Figure 3

Interview Script

Interview Script

Participant: Are you a student?
Interviewee: Yes
P: What is your major?
I: Computer Science, but I just switched to it last semester.
P: What are your class hours?
I: I'm taking 15 credit hours, but I also work at Starbucks around 10 hours a week so I may not be home much.
P: Are you a quiet person or a more outgoing person?
I: I'm more of a quiet person, but with friends I'm talkative.
P: What degree of privacy do you need?
I: I don't really care too much about privacy, but I'll lock my door when I need it.
P: Would you describe yourself as someone who is easy to talk to?
I: Yea I would say so. I think I'm a good listener too, or that's what my friends tell me.
P: What about when there's a disagreement?
I: If there's a disagreement of some kind I try to hear the other person out and try to work things out.
P: What do you do when you're really upset or hurt by someone or something?
I: Usually I try to get over it, but if I can't I'll confront them and try to fix things. I don't like to bottle things in or hold grudges.
P: What kind of TV shows and music do you like?
I: I really like watching House and Glee, and I like older rock music, like the Beatles and Queen.
P: How loud and often do you like to play your music?
I: I like to play my music whenever I'm in my room and not doing work, but I don't play it loudly.
P: What kinds of food do you like?
I: Italian food and Sushi
P: What food allergies/restrictions do you have?
I: I don't have any allergies, and I'm not really a picky eater.
P: What's your policy on sharing?
I: I don't mind sharing things, as long as people ask beforehand and leave it like you found it.
P: What are some of your hobbies?
I: I like watching German movies and going running.
P: What annoys you?
I: I am generally easy to get along with, but one thing that really annoys me is loud music, especially when I'm trying to study.
P: How often will you have friends over?
I: I would say maybe around once or twice a week.
P: Do you anticipate having overnight guests?
I: Probably not. I don't have a boyfriend so if I do have anyone over it would probably be a friend.

P: How often?
I: It wouldn't be very often.
P: Could you ever see yourself bringing home strangers late at night?
I: No, definitely not.
P: Do you plan on hosting any parties?
I: Yea probably here and there.
P: How frequently?
I: Once a month at most.
P: What are your parties like?
I: They don't get too crazy - I like playing music and just hanging out.
P: What are your weekends like?
I: Usually I'm busy studying, but if not I'm probably either out with friends or staying in watching a movie.
P: Do you have any pets and how do you feel about them?
I: No, I don't, and I don't mind pets, but I don't like snakes or weird ones like that.
P: How quiet or noisy are you?
I: I tend to be pretty quiet most of the time, I guess unless friends are over.
P: How much noise can you tolerate?
I: When I'm studying I don't like any noise.
P: When do you usually go to sleep?
I: I go to sleep pretty late - usually around 1am.
P: When do you usually wake up?
I: I usually wake up around 10-11am.
P: Are you a light sleeper?
I: No, I could sleep through World War Three.
P: What sort of study environment do you prefer?
I: Quiet and isolated
P: How often do you study?
I: Almost every day since I'm taking pretty hard classes this semester.
P: Would you rather it to be cool or warm?
I: I don't really have a preference.
P: Do you smoke or drink?
I: I drink occasionally, but that's it.
P: How do you feel about sharing kitchen supplies or groceries?
I: I don't mind sharing kitchen supplies like spoons, forks, pots, and pans but I'd rather not share my groceries.
P: Do you tend to cook a lot?
I: Not really, I don't have time to cook.
P: Would you describe yourself as a clean person or a messy person?
I: I'm more of a messy person, because I tend to put off cleaning my room until after I'm done with tests and projects.
P: How do you feel about splitting cleaning duties?
I: I think we should just clean up after ourselves, and take turns cleaning the common areas.
P: Have you ever had a roommate before?
I: Yes I have.
P: What, if anything, bothered you about your past roommate?
I: Not much, we got along really well but sometimes we had conflicts about who should clean what.

P: What did you enjoy?
I: Everything else. She was really friendly, and we got really close.
P: Are you committed to the whole lease period?
I: Yea, sure.
P: How do you envision splitting the bills?
I: There are three of us, right? So just splitting the rent and utilities in third should be fine… unless someone has a bigger room.

Figure 4

Debriefing Statement

Debriefing

You just participated in our research study on technology constraints on non-verbal aspects of communication. In this study, we used four different conditions to explore the effects that the note-taking methods would have on eye contact – pen and paper, a tablet device, a desktop computer, and a control condition. In this experiment, we were actually measuring eye contact with the glasses you were wearing during the interview, which is an eye-tracking device. We did not tell you during the experiment that we were measuring eye contact, because we did not want this to alter normal behavior in terms of eye movement and gaze. After the interview you took a personality survey, and this is because we are also investigating any correlations that extraversion and introversion have on eye gaze. The person you interviewed was actually not a fellow participant but a confederate who memorized answers to the interview questions. This was necessary in the study, because we wanted to make the interview as realistic as possible, and if you, the participant, knew that the interviewee was part of the experiment that could have changed your behavior which wouldn't be favorable for this research study.

At this time please let the experimenter know if you would like to opt out of this research study and/or exclude the use of your data.